

REMARKS

The amendment to claim 8 is supported by canceled original claims 15 and 17 as well as by disclosure at page 8, line 21, page 9, line 16 and the examples which refer to substrates with chrome on quartz and the use of electron beam exposure. Applicants submit that the amendment does not add any new matter to the disclosure.

The invention centers on improved methods for patterning metals such as chromium, commonly used in mask-making. The methods of the invention alleviate problems with footing and coving associated with the prior art in the context of mask-making. In particular, the invention involves the use of a resist composition comprising a combination of (i) room temperature solid base selected from the group consisting of aromatic amines and imidazoles, and (ii) a liquid low vapor pressure base selected from the group consisting of triethanolamine, 1-naphthylamine, 2-naphthylamine, diphenylamine, acetanilide, 3,6,9-triazaundecamethylenediamine, 4,4'-propane-1,3-diylbismorpholine, and 1,8-azabicycloundecene. The examples in the present application show that the combination of bases yields an unexpected improvement in performance compared to using any of the bases individually in the context of electron beam imaging of resist patterns on chromium-containing layers.

Fujimori (US Pub. Appl. 2003/0186161 A1) discloses a photoresist composition where a wide range of base additives may be employed. Fujimori is concerned with the performance of the photoresist in the context of line edge roughness in patterning for making chips using far UV radiation. Fujimori does not disclose or suggest the performance of photoresists in the context of electron beam imaging to form patterned chrome layers. Fujimori et al. does not disclose or suggest any specific combinations of base additives for such a process, nor

does Fujimori give any guidance regarding selection of such combinations for such a process.

Koguchi et al. (US Pat. 4814244) is cited to show the use of resist compositions in ion beam patterning processes. Koguchi et al. does not disclose or suggest any specific combinations of base additives in the context of electron beam imaging to form patterned chrome layers, nor does Koguchi et al. give any guidance regarding selection of such combinations in the context of electron beam imaging to form patterned chrome layers. Koguchi et al. does not disclose or suggest electron beam imaging processes. Thus, applicants submit that the combination of Fujimori with Koguchi et al. would not make obvious the presently claimed methods requiring use of the specified combinations of base additives and electron beam imaging to form patterned chrome layers.

Okumura et al. (US Pat. 4954218) discloses anisotropic etching of dielectrics in the context of chip fabrication. Okumura et al. does not disclose or suggest the use of combinations of base additives, nor electron beam imaging to form patterned chrome layers. Thus, applicants submit that the combination of Fujimori with Koguchi et al. and Okamura et al. would not make obvious the presently claimed methods requiring use of the specified combinations of base additives and electron beam imaging to form patterned chrome layers.

Momma et al. (US Pat. 5731131) was cited against claims 18 and 19 which have been canceled from the application. Applicants submit that Momma et al. does not address the deficiencies of the Fujimori, Koguchi et al. and Okamura et al. references noted above.

For the above reasons, applicants submit that the application is now in condition for allowance. Such allowance is earnestly and respectfully solicited.

Respectfully submitted,
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